THE STATUS OF FOREST INSECTS

BOISE NATIONAL FOREST 1965

Forest insect infestations on the Boise National Forest during 1965 for the most part could be considered as endemic. The only exception to this is the spruce budworm infestation along the Middle Fork of the Salmon River, that is currently classed as epidemic. This particular infestation is not peculiar to the Boise Forest, but is contiguous with budworm infestations that have been present on the Payette and Challis National Forests for several years.

The following information has been accumulated through aerial detection survey flights and followup on-the-ground biological evaluations during the 1965 field season. The report will consist of three parts: bark beetles, defoliators, special section—storm damage.

BARK BEETLES

The following information on a Black Hills beetle infestation in second growth ponderosa pine stands is being brought to your attention because of its proximity to forest lands. As of now the infestation is occurring primarily on State and private lands approximately three air miles from the forest boundary, and it is felt that you should be alerted to this infestation because it has persisted for three years and shown yearly increases in the number of trees attacked. The infestation has been slowly moving toward the Boise Forest boundary.

Aerial observations and ground evaluations show that the Black Hills beetle is persisting in second growth ponderosa pine stands southeast of Cascade, Idaho, on Big Creek near Warner's Pond. Aerial observations in the fall of 1965 showed 2,000 to 2,500 faded trees. The ratio of new attacks to old attacks is running about two to one. If the infestation maintains its present level, it is expected that 3,000 to 4,000 green trees will be attacked next year.

1965 brood densities averaged 120 per square foot compared with 114.2 for 1964 and 107 for 1963. From this it can be seen there has been a slow but steady increase in broods as of the last three years. This year's attack intensities averaged 7.5 per square foot which is comparable to what was found in 1964. Subcortical predators and parasites appear to be at about the same level as were noted last year. The predaceous fly Medetera sp. averages 45 per square foot. Also, some Clerid larvae were found. They averaged three per square foot and are known larval predators.

Since 1963 the phenomena of two attacks per year has been observed in this infestation. This was first noted when the mature larvae, pupae, and callow adults were found in November of 1963. Spring evaluations in 1964 showed

that the beetles were making an early attack. The main attack period occurred from mid-July to August of the same year. At the present time the situation appears to be quite similar to what was observed in the past two years. November 1965 evaluations showed 17 callow adults and 7 pupae per square foot of bark surface. It is felt that these broods will mature rapidly with the onset of warm weather and produce early spring flights next year.

The majority of attacks have been confined to smaller diameter, stagnated ponderosa pines, however, in 1964 attacks were noted to be more prevalent in larger diameter trees. This year's evaluation shows that the situation is about the same as in 1964, and in effect the beetles are causing a natural but indiscriminate thinning of the stagnated material, however, population levels are of sufficient number to present a potential threat to surrounding stands of mature and overmature pines. Therefore, it is felt that this infestation will maintain its present level with chance of increasing next year and moving into adjacent uninfested trees. If this happens, there is a possibility that new attacks could show up along the boundaries of the Boise Forest.

A small infestation of Black Hills beetle in second growth ponderosa pine stands is currently active in Castle Creek east of House Mountain Lookout. This infestation has been under observation for the past two years. An on-the-ground inspection of this area was made, and it appears this infestation has the biological potential to remain at its present level or possibly increase during 1966.

WESTERN PINE BEETLE

A slow but steady increase in the number of faded ponderosa pine has been observed on the Emmett Ranger District for the past four years. This year aerial observations show that the increasing trend is maintaining itself, however, there have been no large scale buildups as far as groups are concerned. Group sizes are staying at about two to five trees. The infestation, however, has increased its north-south extension, and faded trees have been located from the southwestern side of High Valley to north of Sagehen Reservoir. Ground observations show that the ratio of new attacks to old attacks is about two to one. This is a slight decrease from last year. Faded groups in the vicinity of Pine Creek are showing even smaller increase potentials. Attacks in that area are running one new tree for every one tree that was killed last year. At this time the infestation is considered static in Pine Creek. Evaluation of attacked trees show that western pine beetle broods have increased slightly over what were found in 1964. At the present time they average about 52 per square foot of bark surface. Trees most severely affected are mature to overmature age class ponderosa pines, and to date no variation with respect to smaller trees being attacked has been noted. Bark samples revealed that the predator Medetera sp. appeared to be more numerous than last year and average 20 to 25 per square foot of bark surface. Also, numerous adult staphylinids and Clerid larvae were observed. Woodpeckering

was somewhat scattered, and in some areas they have removed 50 to 90 percent of the bark. At the present time western pine beetle populations on the Emmett Ranger District are endemic, but steadily increasing trends can be expected.

In the past years infestations of similar nature have built up in ponderosa stands on the Boise Forest and then due to natural and climatological factors have dropped off to relatively low levels of activity. Records show that these cycles average three to five years in duration.

Current group type infestations will be kept under entomological surveillance to determine western pine beetle trends. In consideration of biological factors that were observed during the evaluation periods it is felt the western pine beetle will remain at about the same level for at least another year.

DOUGLAS-FIR BEETLE

Since 1962 a decided downward trend has been noticed in attacks of the Douglas-fir beetle in Douglas-fir stands throughout the Boise Forest. Aerial and ground surveys since 1962 have shown Douglas-fir beetle populations remaining at a relatively low level, with the exception that some small groups are showing up in widely scattered areas. For the most part these infestations are small and are associated with areas that have undergone relatively large attacks in the past. At the present time the largest number of small infestation centers in Douglas-fir type have been observed on the Lowman District. Scattered infestations of two to ten trees per group were noted on the Garden Valley and Landmark Districts.

Considerable windthrow and snow damage of Douglas-fir occurred during the December 1964 storms. The downed material offers suitable media in which Douglas-fir beetle populations may build up to fairly heavy intensities during 1966. If natural control factors and adverse weather conditions do reduce Douglas-fir beetle populations in storm-felled trees, many infestation centers may develop next year. Conversely, if the aforementioned factors hold the broods down, then infestations for 1966 are predicted to remain at about the same level as were observed in 1965. A more detailed discussion of the storm damage problem is covered later in this report.

BARK BEETLES ASSOCIATED WITH CAMPGROUND CONSTRUCTION

Felling of trees to make three new campgrounds near Sagehen Reservoir was undertaken during the 1965 field season by forest crews. Trees were bucked into burnable length logs for camper utilization, and for the most part were stacked in cordwood fashion.

Bark beetles usually prefer downed material of this type to build up in, and sizeable populations were found infesting the stacked piles in September. Ponderosa pine logs were infested with Black Hills beetle broods, Dendroctonus ponderosae, and the western pine beetle, Dendroctonus brevicomis. Lodgepole

pine sections were heavily infested in the top 180° with Ips spp. beetles. The lower 180° of the logs were supporting broods of the Black Hills beetle, D. ponderosae. In cases where Douglas-fire had been felled the Douglas-fir beetle, Dendroctonus pseudotsugae, made successful attacks. Population levels in the cut and stacked material were heavy enough to present a threat to adjacent standing trees. In the case of the Dendroctonus spp. beetle flights will not occur until next year when broods mature. Conversely, Ips populations had built up from the time lodgepole pine was cut, and at the time of the evaluation in September, flights were in progress. The Ips beetles are multi-generation, secondary insects, and were filling into newly cut uninfested piles of lodgepole pine. In some cases Ips populations were noted in ponderosa pine and Douglas-fir.

This situation was brought to the attention of Boise staff personnel, and it was decided that the best method of handling the problem was to get rid of the infested material as fast as possible. Information was relayed to the District Ranger at Emmett, who in turn took immediate administrative action. This action consisted of notifying the local Chamber of Commerce that fireplace-size wood was available to the public if they would provide their own methods for removing the wood. Within a short period of time the infested and non-infested material was removed from the Sagehen Reservoir campground sites. Removal of this material will reduce the hazard for next year. These areas will be watched closely next summer to determine if any of the late flying Ips adults this year made attacks into standing trees.

DEFOLIATORS

TUSSOCK MOTH

Tussock moth populations have been present in and around Town Creek plantation on the Boise National Forest since 1959. Population levels have varied from endemic to epidemic, and for the most part larvae have confined their feeding activity to the genus Ceanothus sp. and other broad-leaved plants. When larval populations of the tussock moth become numerous, individuals abandon broad-leaved plant species and defoliate young ponderosa pines. Heaviest defoliation of ponderosa pine in recent years occurred in 1959. Since that time tussock moth populations have not become dense enough to pose a threat in the plantation areas. In 1962 egg parasites and a native virus drastically reduced populations in and around the Town Creek area. However, since 1962 a slow but steady increase in population levels has been observed.

In 1964 larvae caused moderate to heavy defoliation in a somewhat mosaic pattern throughout Town Creek plantation on Ceanothus sp. and other broad-leaved plants. During the fall of 1964 four to five egg masses per bush were present. Larvae from these egg masses hatched out in 1965 and fed aggressively on broad-leaved plants. Some feeding on ponderosa pines was also noted. This, however,

were not posing an immediate threat to the young trees.

During 1965 a few virus-killed larvae were found. Fall counts this year show that egg masses averaged five to six per bush which approximated the number found last year. Laboratory rearing showed that some parasites are present in egg masses that were deposited this year. Results of this year's evaluation work indicate that there is a sufficient number of egg masses in Town Creek and adjacent areas to maintain populations at about the same level as in 1964. This is, however, barring the chances that the native polyhedral virus and egg parasites do not reduce population levels during 1966. If these natural control agents do not exert significant control next year, it is expected that continued moderate to heavy defoliation of Ceanothus sp. and other broad-leaved species will occur. There is also the possibility that some damage may occur to ponderosa pine seedlings.

SPRUCE BUDWORM

Spruce budworm infestations in Douglas-fir and true firs were observed in the Wilderness Area of the Boise National Forest in 1965. Aerial observations of the infestation showed that light and moderate damage classes were almost non-existent. Heavy defoliation occurred on 60,200 acres. This infestation has been persistent for several years and is contiguous with budworm infestations on the Payette and Challis National Forests. At the present time budworm populations extend up main Marble Creek and its numerous side drainages; then in a somewhat eastward, northeastward line, down the Middle Fork of the Salmon River and in a northward direction to the Payette-Boise boundary. Due to the Chief's policy of giving infestations relatively low priority for evaluation work in wilderness areas, on-the-ground evaluations were not made of the infestation in 1965.

During this year's flights it was observed that some tree mortality is occurring throughout the understory in reproduction and pole-size Douglas-fir. Scattered killing of trees takes on a mosaic pattern throughout the infested area. Tree mortality of this type has been noted throughout the entire infested area on the Boise, however, it is not extensive in nature.

SPECIAL REPORT--STORM DAMAGE

SNOW AND WIND DAMAGE

In late December 1964 unseasonably warm weather accompanied by relatively heavy rains caused rapid snowmelt and thawing of the ground. Following the rain and thaw period, strong winds and snow felled thousands of Douglas-fir and damaged ponderosa pine over a wide area.

In late March 1965 a special aerial survey was made of the forest to determine whether the damage had been concentrated and approximately how much area contained downed timber. Aerial observers found that relatively few extensive areas of felled trees could be located, however, many thousands of acres of

forest land had storm-thrown timber averaging from one to 150 stems per acre. On the Boise, damage was primarily confined to north-facing slopes containing a high quantity of Douglas-fir. The rootballs of much of the wind-thrown fir remained intact. This meant that trees would undoubtedly stay in a semi-moist condition throughout the summer, and there is a very good possibility that the bark beetle buildups would occur in the felled trees. In ponderosa pines the damage was more or less confined to top and limb breakage. In a few cases, however, entire trees were toppled.

Entomological evaluations of the condition of downed timber were made during the fall in as many locations as was physically possible. As would be expected with damage of this type scattered over an area as large as was encountered, beetle buildups have varied considerably from location to location. Almost without exception where downed Douglas-fir trees were encountered, the Douglas-fir beetle had started relatively heavy buildups in the lower 180° of the tree's bole. Also, where trees were in a moist condition, the buildup continued throughout the full 360° of trees' circumferences. Several locations were checked for ponderosa pine damage. Limbs and tops that had been broken and some whole trees that had gone down were examined. For the most part Black Hills beetle populations were building up in the lower 180° of the downed material. The top 180° was filling in whith Ips. Bark beetles that have attacked downed material this year are expected to emerge and make attacks in 1966 to uninfested downed material. Also, the possibility of standing tree infestations exists. At the present time there is no way possible to estimate the number of infestation centers that may develop. Similarily, there is no way to estimate the intensity of such attacks because brood survival, parasitism, predator action, and climatological factors either for or against beetle development cannot be assessed until next spring. An attempt will be made to re-examine some of the more troublesome areas next year.

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